IV. Appendix

Aerial view of the Pentagon looking northwest. Office buildings within a three-mile radius of the Pentagon, like those seen in the background, provide swing space for most of the 5,000 employees that were relocated from Wedge 1 .

IV. APPENDIX

GLOSSARY OF TERMS

Backbone
Major telecommunications components.

Best value
Best value determination is typically based on an analysis of factors including past performance, management approach, technical approach, probable cost, and small and disadvantaged business support.

Core and Shell
Building common elements in an area, including walls and public corridors and rebuilding the main utility systems.

Design-Bid-Build
The standard procedure for construction contracts.

Design/Build
The Renovation Program's approach to construction contracts that allows the design and construction to operate simultaneously to best meet the requirements of the intended tenant.

External swing space
Temporary office space outside of the Pentagon in nearby office buildings.

Fit-out
Building interior office space for the intended tenant.

Internal swing space
Temporary office space built-out inside the Pentagon.

PERTOC
Pentagon Environmental Remediation Task Order Contract

Punchlist
A list of outstanding construction items.

Spine-Wall
The demountable wall found in systems furniture that carries electrical and telecommunications wiring.

Swing space
Temporary tenant space built-out in areas in and around the Pentagon. Occupied while the existing space is being renovated.

Systems Furniture
Demountable partitioned office furniture that provides greater flexibility than standard office furniture.

Aerial view of the Pentagon as it appeared in February 2000. Construction of the second pedestrian bridge at Corridor 3 continues along the South Terrace (right). Trailers dedicated to the Wedge 1 team can be seen to the left of the bridge construction area (center of photo). The Wedge 1 construction staging area can be seen on the Heliport side (left).

PROGRAM HISTORY – THE NEED FOR RENOVATION

The Pentagon is one of the most recognizable buildings in the world. It has been inseparably linked with the United States Military since its construction during World War II.

During the first half of 1941 the War Department found it increasingly difficult to provide space for the headquarters staff of an expanding army. In May, the Public Buildings Administration proposed erecting temporary structures for various agencies on the outskirts of the city. In July 1941, 24,000 personnel were scattered among seventeen buildings in Washington, D.C., with others in Fort Myer and Alexandria, Virginia. By the beginning of 1942, the number of personnel was expected to reach 30,000. The President, therefore, asked Congress for authority to construct additional buildings within or near the District of Columbia. The War Department's Chief of Construction, Brigadier General Brehon B. Somervell, had a better idea, a scheme to house the entire War Department under one roof. He talked to General Moore, Deputy Chief of Staff, and to U.S. Representative Woodrum (D-Virginia) about his idea.

The Pentagon under construction in 1942. The 29-acre structure was completed in just 16 months. The building has never undergone a major renovation and today, after 58 years, all its building systems need complete replacement.

CONGRESSIONAL APPROVAL

At a Thursday, July 17, 1941, hearing on construction projects before the House Subcommittee on Appropriations, the Chairman, Mr. Woodrum of Virginia, suggested to Brigadier General Eugene Reybold and Brigadier General Somervell that the War Department find an overall solution to its space problem rather than the partial solution proposed by the Public Buildings Administration. Somervell directed Architect G. Edwin Bergstrom to place on his desk, by 9 o'clock Monday morning, basic plans and architectural perspectives for an office building to house 40,000 people. Five days later, on Tuesday, July 22, 1941, Reybold and Somervell presented the plan to the Subcommittee. The plan was approved by the House on July 28, 1941, and by the Senate on August 14, 1941.

On August 25, 1941, President Roosevelt signed the bill appropriating funds for construction. However, because of considerable controversy over the proposed location at the foot of Arlington National Cemetery, he reserved the right to pick the site. The following day, the President directed that the construction site be moved south to the Pentagon's present location.

THE DESIGN

The Pentagon's unusual five-sided configuration was dictated by the site originally proposed (adjacent to Memorial Drive, about three-fourths of a mile north of where the building was actually constructed). An early plan called for a square structure with one corner cut off to accommodate an existing road. This resulted in a skewed Pentagon shape. Serious objections were raised to locating the building on open land directly between Arlington Cemetery and Washington's Monumental Core, and discussions ensued regarding selection of a building site resulting in less visual and physical impact from the project. During the debate on the site, the project's chief architects, George Edwin Bergstrom and David J. Witmer, continued to refine the design. The final design retained the five sides, in the form of a true pentagon, which gave rise to the building's name. That shape resulted in the most efficient use of available space. The concept of using several concentric rings to contain the space evolved during further refinement of design. Preliminary design and drafting took just 34 days. A project of this magnitude and urgency demanded the rapid assembly of an unprecedented design and production effort.

The office of the chief architect rapidly grew to 327 architects and engineers who were supported by 117 field inspectors. The weekly output of prints ranged from 12,000 to 30,000 with reproduction machines running on a 24-hour basis. For periods of time, new drawings were issued nightly. The reproduction effort consumed 15,000 yards of print paper per week.

Construction began on September 11, 1941, and was completed on January 15, 1943. At one stage of construction, 15,000 people were employed on the job working three shifts, 24 hours a day. At night, they worked under floodlights. Construction took just 16 months, a remarkable feat of engineering and management.

THE PENTAGON BUILDING

The Pentagon is the Headquarters of the Department of Defense and the national defense establishment. It houses the Offices of the Secretary of Defense, the Joint Chiefs of Staff, and the Secretaries of the three Military Departments. The Pentagon building, at 6,500,000 square feet, provides approximately 3,800,000 square feet of occupiable space. At the peak of World War II, 33,000 people were provided working space in the building.

Aerial view of the Pentagon in November 1999. The Pentagon building covers 29 acres and has three times the office space of the Empire State Building.

SIZE

The Pentagon building is composed of five concentric pentagonal rings connected by ten radial corridors. Each of its outer walls is 921.6 feet long. The building covers 29 acres, the largest ground area of any office building in the world. A five-acre pentagonal courtyard is located in the building's center. The building and its central courtyard cover 34 acres. There are 17.5 miles of corridors in the building. The structure is three times the size of the Empire State Building and 50 percent larger than Chicago's Merchandise Mart. The building rests on 41,492 concrete piles, the combined length of which would stretch 200 miles. The five concentric pentagonal rings are separated by interior courts which serve as light wells. This design feature increases the number of windows allowing natural light. Each ring has five stories. The Mall and River sides of the building have a Basement area which includes a partial Mezzanine. The innermost and outermost rings have sloping slate roofs, while the other three rings have flat, built-up roofs. The rings are connected at each floor level by a series of ten radial corridors extending from the "A" ring (innermost) to the "E" ring (outermost).

EXTERIOR

The exterior walls of the concentric rings and the interior courtyard are exposed concrete. They appear to have a wood-grain texture because they were poured into wooden forms made of 8-inch boards. A gap was left between boards enabling concrete to ooze and form a slight ridge. From a distance this gives an appearance of limestone.

Clockwise from its northern point, the Pentagon's five facades are the Mall Terrace Entrance facade, the River Terrace Entrance facade, the Concourse Entrance (or Metro Station) facade, the South Parking Entrance facade, and the Heliport facade. The outer facades of the Pentagon are simple, with a minimum of ornamental embellishment. Although the ornamentation style is classical in origin, it has been greatly simplified. The outer walls are limestone, as a direct result of a restriction by President Roosevelt that there be no marble in the building.

MATERIAL SHORTAGES

The shortages of materials required for war production raised many design and construction problems. The use of reinforced concrete in lieu of formed steel for the building made possible a saving of 43,000 tons of steel, more than enough to build a battleship. The use of concrete ramps rather than elevators further reduced steel requirements. Drainage pipes were concrete; ducts were fiber, interior doors were wood. An unusual wall design - concrete spandrells carried to window sill level - eliminated many miles of through-wall copper flashing. When Somervell was asked to make still more drastic reductions, he agreed to "striptease" the entire structure. Bronze doors, copper ornamentation, and metal partitions in rest rooms were among the first to go. The stripping process continued throughout construction.

The Pentagon's River Terrace as it appeared in April 1999.

THE SITE

The Pentagon Reservation is located in southeastern Arlington County, Virginia, and is situated between a large man-made lagoon (the Pentagon Lagoon, formed during construction) and the southeastern corner of Arlington National Cemetery. The northeastern and eastern facades have unobstructed vistas of the Monumental Core of the Nation's Capital across the Potomac River. The Pentagon's relatively low profile also permits clear vistas of Washington from the highlands of Arlington National Cemetery.

TERRACES

There are large ceremonial terraces in front of the Pentagon's Mall and River Entrances. The River Entrance terrace extends 900 feet to the Pentagon Lagoon bounded by a ceremonial landing dock and two monumental stairways. The maximum width of the River Terrace is 450 feet. The terrace in front of the Mall Entrance is smaller, measuring 600 feet by 125 feet.

For many, the network of roads around the Pentagon is often as confusing as the maze of rings and corridors inside the building.

ACCESS

The Pentagon site originally contained three cloverleaf interchanges that were among the earliest such structures constructed in the United States. These freeway-scale interchanges were necessary to handle traffic associated with the large number of people working in the building.

LAGOON

The Pentagon Lagoon was created during construction of the building as a result of dredging sand and gravel for concrete, and to obtain fill for landscaping. The lagoon is also the location of the water intake for the Pentagon's Heating & Refrigeration Plant. The Roaches Run Waterfowl Sanctuary lagoon, created during construction of the George Washington Parkway in the early 1930's, is used for the Heating & Refrigeration Plant's water discharge outfall.

The Pentagon Reservation has been altered over the years. A heliport was added; Shirley Highway (now I-395), a limited access Interstate Highway and interchange, infringed on the Pentagon site on the south side; a major Metro station and transfer point was added, and under-building bus and taxi tunnels were converted to offices.

BUILDING CONDITION

The Pentagon has suffered from decades of neglect and under-funded maintenance and repair programs. Many of the building systems have deteriorated beyond economical repair and require complete replacement. Building code violations and unsafe conditions have been brought about by the Pentagon's non-compliance with the fire protection and life safety standards established over the last 50-plus years. Structural deficiencies also need to be corrected. Some areas of the Basement have settled as much as 12 inches due to the poor load bearing capacity of the soil under the floor slab.

INTERIOR SPACE LAYOUT

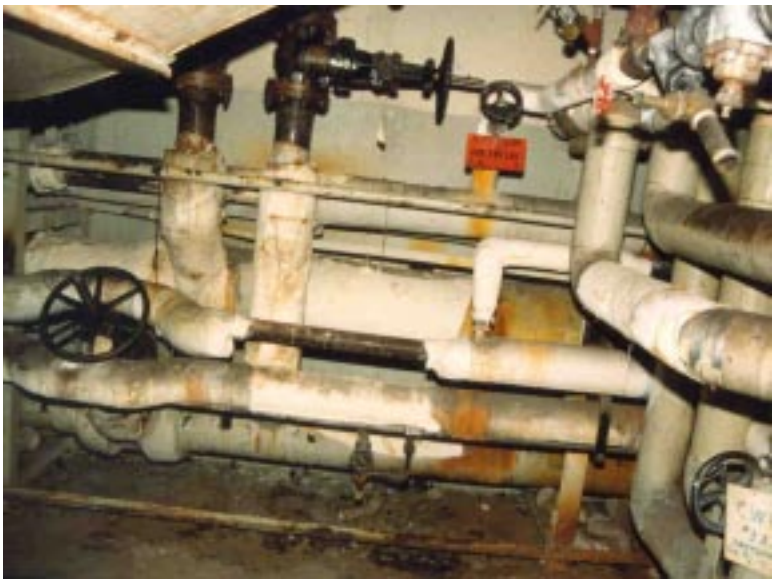
The Pentagon's original interior space layout has been modified over the years. Walkways and service corridors have been closed and converted to office and storage space. Original office areas that were large open spaces have been chopped up and enclosed with full height partitions that make the building functionally inefficient. This adversely affects heating, ventilating, and air conditioning system controls and distribution.

BUILDING SYSTEMS

Before the Renovation Program began, none of the original major building systems had ever been replaced nor had they been significantly upgraded. The widespread use of computers and modern technology has overwhelmed the capacity of deteriorated building systems. Electrical, plumbing, heating, ventilation, and air conditioning (HVAC) systems need to be replaced and modernized to accommodate added loads and to provide efficiency and flexiblity. The building has individual packaged air conditioning units providing cooling for special use areas in addition to the chilled water provided by the Pentagon Heating & Refrigeration Plant. The overloaded secondary electrical circuits result in as many as 20 localized power outages every day, which increases to between 30-40 a day in the winter when people bring unauthorized space heaters into the building to compensate for the deteriorated HVAC system. Regular plumbing failures occur as a result of the deteriorating piping systems, which are 58 years old. Of the 691 drinking fountains in the Pentagon, approximately 30 are out of service on a daily basis.

The Pentagon's existing utility distribution system is in "a potential state of catastrophic failure" according to an independent consultant. In addition to their antiquated condition, most pipes are insulated with asbestos.

During Desert Shield/Desert Storm, a fire broke out in the Joint Chiefs of Staff area of the Pentagon. Arlington County, which provides fire protection to the Pentagon, pressurized a standpipe and, consequently, blew out a four foot section of ten inch pipe. Water flooded approximately 350,000 square feet of the Pentagon basement, nearly causing the Army and Air Force Operations Centers to shut down. The water flowed through a steam tunnel to the Heating & Refrigeration Plant basement, where the water reached a height of seven feet.



Old corroded pipes result in frequent leaks throughout the Pentagon.

Frequent leaks, breaks in pipes, and clogged pipes not only escalate operation and maintenance costs, but also create potential health hazards.

The basement has been flooded as the result of condensate leakage, inoperable sump pumps that were unable to accommodate rising ground water, and rusted and corroded valves. Only valves that have been replaced are operable.

The HVAC systems are original and in need of replacement. Of the Pentagon's 150 miles of ductwork, approximately 17.5 miles of it is made from asbestos, typical of the time when the Pentagon was built.

The electrical system was designed for a manual office and does not support the demands of today's high-tech office environment. Obsolete components make maintenance and repair difficult. Panel boards are loaded beyond maximum capacity and do not meet code, thereby creating a fire and safety hazard. The information systems that were installed in the Pentagon are plagued with abandoned cabling and an unverifiable backbone for the building. Consequently, there are numerous local area networks that are operated independently of one another, which causes problems.

EXTERIOR WALLS

Architectural and structural elements of exterior walls have shifted and settled. Moisture is penetrating cracks, causing damage to the concrete and reinforcement. Cracking and evidence of movement is apparent on all perimeter walls. The exterior walls are not thermally efficient. The limestone facade is in need of cleaning and repair to insure its weather tightness.

There are two types of courtyards at the Pentagon: (1) interior courts (light wells) between concentric rings of the building and, (2) the Center Courtyard.

Much of the Pentagon's exterior concrete is in disrepair.

All courtyard walls are of concrete with fair to failing surface conditions. Concrete is spalling, particularly where rusting reinforcing bars are exposed. Patch material is failing; cracks, efflorescence, and water stains are evident everywhere. In addition to problems cited in the courtyard walls, cornices are disintegrating, especially between Corridors 7 and 10. There are also problems due to use of non-conforming materials and poor construction.

Access bridges span several interior courts at the approximate mid-point of the court length. Originally, these bridges were open, crossing the court at each floor level. A number of the bridges have been enclosed and incorporated into secondary corridor systems while others open directly from individual offices. All of these bridges are in poor condition. Attempts made to control leaks at the interior spaces have been unsuccessful. At a minimum, replacement of the roof/bridge drainage system will be required at each bridge. Concrete surfaces and waterproofing will have to be repaired and interior surfaces restored.

BASEMENT FLOOR

The Basement floor of the Pentagon was constructed as a slab on grade, designed to carry a light storage load. A 1983 report on the stabilization of the depressed floors states that the basement floor slab was placed directly on the underlying soil fill, which consists of surface fill materials overlying compressible organic soil. The subsidence has been gradual over the years and was aggravated by voids under the slab, leaking utility lines, and at times by the dewatering during the construction of Metrorail. These subsurface conditions, along with the assignment (and re-assignment) of special purpose activities and the storage of heavy loads of material and equipment, have caused the basement slab to settle up to 12 inches in some areas, causing severe damage to critical communication centers. Repairs were made to correct the distressed areas by pumping concrete under the floor, or by adding leveling slabs, but these repairs were unsuccessful. The only recourse is to remove entirely some 300,000 to 500,000 square feet of slab and reframe the floor as an independent floor slab bearing on new and existing pile foundations. A large portion of this deficient slab has been replaced during the renovation of Basement Segement 1. Lowering the Basement slab in some areas will allow maximum expansion of the Mezzanine space.

Garbage containers and buckets catch water leaking from pipes overhead in the Pentagon's basement. In addition to a sinking floor slab, water-stained ceiling tiles and dark corridors are commonplace in the lower levels of the building.

RIVER AND MALL TERRACE

The River and Mall terraces extend beyond the exterior perimeter of the building and the occupied areas beneath have experienced considerable damage from water intrusion. Extensive reworking of major building expansion joints, deteriorated waterproofing and concrete elements is required to make these areas watertight. The River Terrace waterproofing has been completed as part of the basement renovation activities.

The entire River Terrace parking lot and a portion of the parade field were excavated to clear the way for waterproofing and repair to the area.

NORTH PARKING PEDESTRIAN RAMP

The pedestrian ramp, leading into the Corridor 8 Entrance from the North Parking lot has undergone serious deterioration as a result of failure of one of the abutments. Temporary jacks were installed as an emergency measure to support this failing structure. Complete replacement of this ramp was accomplished in 1997.

HEATING AND REFRIGERATION PLANT

The original Heating & Refrigeration Plant (now fully demolished) that was built in 1943 provided utility services (heating steam and chilled water) to the Pentagon as well as to other parts of the Pentagon Reservation. The plant became obsolete and was no longer efficient and serviceable. Temporary chillers and boilers were being rented to support the needs of the Pentagon, Federal Building #2 (Navy Annex), and Henderson Hall (Marine base). Three rental boilers and six rental chillers were used from 1989 to 1996 for a cost of over $2,000,000 per year. This antiquated plant was replaced in 1998 with the new Heating and Refrigeration Plant.

INFORMATION MANAGEMENT AND TELECOMMUNICATIONS

The current Pentagon information and telecommunications infrastructure is an accumulation of systems and networks, which have been installed, in a piecemeal fashion, since 1943. There are multiple deficiencies specific to the information management and telecommunications posture of the Pentagon. These include outdated and overworked communications systems, an enormous number of single user-oriented and user-unique data systems, inadequate wiring systems, obsolete and congested wire closets, risers, cable pathways, and protected distributed systems, poor quality grounding systems, and limited wiring system access due to asbestos hazards. As information management requirements and technology changed throughout the years, new telecommunications systems were added in an ad hoc manner, often over existing wiring. This has produced a collection of independent and largely non-interoperable systems and networks, many of which are poorly documented.

Before renovation, a person's entire hand and arm could fit through this crack in a concrete beam below the North Parking pedestrian ramp. The bridge has now been completely repaired.

SITEWORK

Traffic conditions, especially in the South Parking areas, are very hazardous. Reconfiguration of roadways, bus, and truck access areas and parking is necessary to provide safety for pedestrians. Parking lots are in poor condition with minimal landscaping. Wide spread failure of pavement base and sub-base is evident. Roads, walks, fences, bridges, and other structures and elements exhibit significant deterioration. Bridge concrete and stonework is crushed and spalled. Exterior steps and terraces are spalled, joints are open, and the occupied areas below these elements have experienced water leakage on a continual basis.

SUMMARY

Generally, the Pentagon's problems requiring a full scale renovation can be grouped into seven categories:

1. Changing requirements for fire and life safety.

2. Miscellaneous systems failure.

3. Engineering systems failure.

4. Changing technology with an increased demand for services.

5. Security.

6. Compliance withe environmental standards.

7. Compliance with the Americans with Disabilities Act.

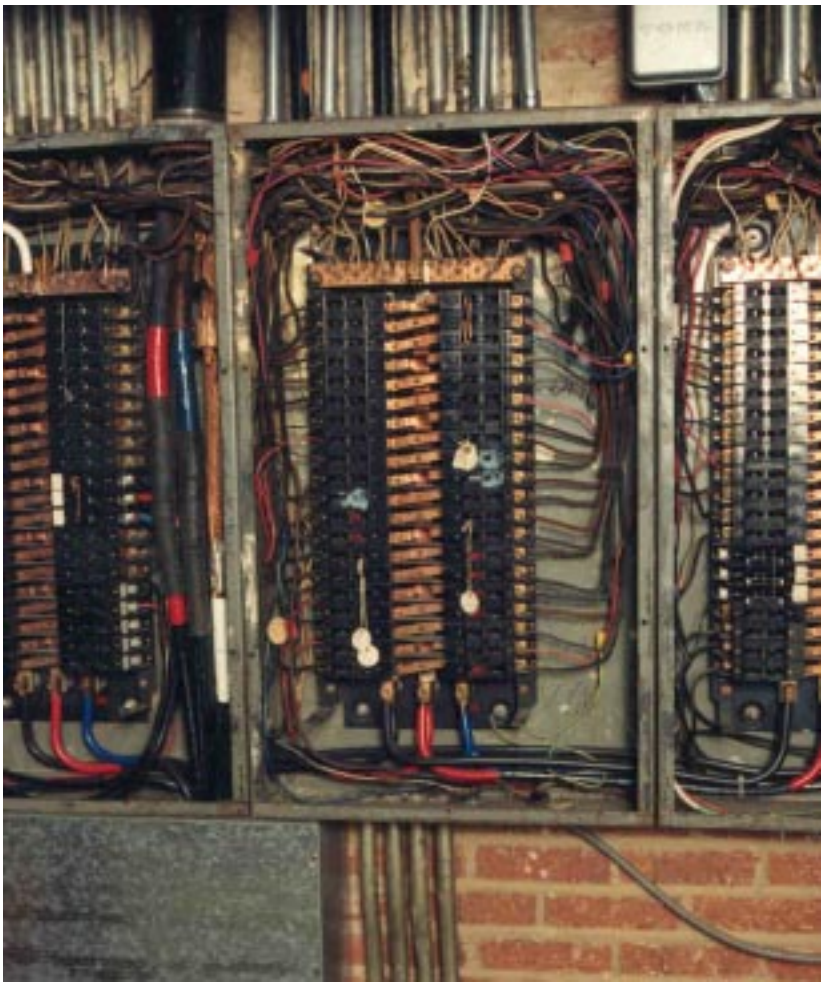
The Pentagon's old Heating and Refrigeration Plant was demolished when the new facility became operational. The original plant was coal-fired until the mid-1980s and each of its boilers and chillers were mechanically unreliable and of insufficient capacity.

FAILURE TO KEEP PACE WITH CHANGING STANDARDS FOR HEALTH, FIRE, AND LIFE SAFETY

Pervasive asbestos and lead contamination of interior surfaces and pipe insulation requires the use of asbestos and lead abatement for even minor repairs to avoid possible health risks to building occupants when these materials are disturbed. This is a significant time and cost restraint to the maintenance and repair program.

The Pentagon's antiquated building systems pose present many potential hazards, including:

- Inadequate sprinkler systems to protect the entire building.
- Numerous emergency diesel generators are currently located inside the Pentagon presenting a potential fire and carbon monoxide gas hazard.
- Excessively long fire egress routes in the building.
- Vehicle/pedestrian conflicts exist throughout the reservation.



Old electrical circuits can not accommodate the energy demands of today's modern technology. An average of 30 localized outages are experienced each day in the Pentagon.

The deterioration of the Pentagon structure and its support systems is marked by the characteristics listed below and on the opposite page.

MISCELLANEOUS SYSTEMS FAILURE

- Rusted and corroded casement window frames in most of the 7,748 windows.
- Shifting and cracking of architectural and structural elements deteriorated expansion joints, cracking of building elements, and water penetration.
- Spalling of concrete, rusting reinforcement bars in the concrete, and deteriorating cornices.
- Deterioration of beam/girder connections.
- Failure of the basement floor due to lack of stable ground support.
- Intrusion of water through deteriorated expansion joints and deteriorated surface waterproofing.
- Deterioration of roadway bridges and their drainage systems.

ENGINEERING SYSTEMS FAILURE

- Severely undersized, inflexible and unreliable, heating, ventilation, and air conditioning (HVAC) systems.
- Unreliability of current building HVAC systems has resulted in independent air conditioning (A/C) units having been installed in certain areas.
- Deteriorated and overloaded secondary electrical circuits result in daily failures of electrical systems.
- Deteriorated and undersized electrical closets prohibit proper wiring and management of electrical systems.
- Deteriorated undersized plumbing, hot water, domestic water and other mechanical systems.

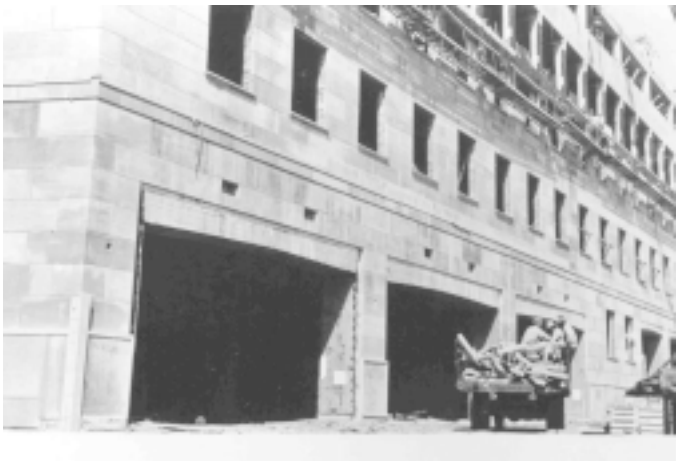
CHANGING TECHNOLOGY REQUIREMENTS

- Increased electrical and HVAC loads due to office equipment such as computers and copy machines, and special equipment such as video and graphics production equipment.
- Current wire chases cannot accommodate cabling systems for telephones, computer networks, and audio/video information systems.
- Inflexible and inefficient space arrangements limit the continued utility of the Pentagon office and support space.

SECURITY

- Metro escalators penetrate into the building envelope forcing the security perimeter inward.
- The dispersed loading docks are difficult to secure. Numerous delivery vehicles penetrate the building security perimeter daily.
- Limited approachways hinder security control at loading docks and delivery entrances (distance from non-control to control areas is so short that guards have no response time before vehicle has reached the guard position).

A typical office in the Pentagon as it appeared in the 1970s. Makeshift conditions continue to plague the building as improvements to building systems have failed to keep pace with technological advances.



The Pentagon's original bus terminal was located within the building's perimeter. Security requirements and air quality concerns forced its closure and relocation to the outside. New security initiatives will push the existing bus loop even farther away from its present location.

The Pentagon is a building of interest to local, state, federal, and architectural historians for the following reasons:

- It is associated with events that have made a significant contribution to the geo-political role of the United States as a superpower during the period from World War II to the present.
- It is associated with the lives of persons who are significant in American history from the time of construction in 1941 to the present day.
- It embodies the distinctive characteristics of the "stripped classical" variant of architectural classicism. This stylistic mode flourished during the second quarter of the 20th century, and was a major theme in federal architecture.
- It is currently classified as the largest low-rise office building in the world.

At the peak of construction in 1942, 15,000 workers labored around the clock to construct the Pentagon in just 16 months from September 1941 to January 1943.

- It was constructed during an important historical period.
- It was built in 16 months, requiring a monumental effort in design and construction.
- It is located adjacent to Arlington National Cemetery.
- It is in proximity to the Nation's Monumental Core.
- It is situated along a major gateway to the Nation's Capital.

The Secretary of Defense, the Honorable Richard Cheney, was notified by the Secretary of the Interior, the Honorable Bruce Babbit, that the Pentagon had been designated as a National Historical Landmark on October 5, 1992. This designation also automatically placed the Pentagon in the National Register of Historic Places.

There are five historic elements of the Pentagon that are cited for special attention:

- The five outer facades of the Pentagon.
- The Center Courtyard and surrounding facades.
- The terrace fronting the Mall Entrance.
- The terrace fronting the River Entrance.
- The Pentagon's distinctive five-sided shape.

A ceremony celebrating the 50th Anniversary of the Pentagon in May 1993 included presentation of a bronze plaque stating "THIS PROPERTY POSSESSES NATIONAL SIGNIFICANCE IN COMMEMORATING THE HISTORY OF THE UNITED STATES OF AMERICA." This ceremony was hosted by Les Aspin, the Secretary of Defense, and General Colin Powell, Chairman of the Joint Chiefs of Staff.

PROGRAM DEVELOPMENT

Control of the design process over the life of the project requires the development of design guidelines and criteria. This control is necessary because of the size and duration of the project, the multi-acquisition approach, and design activities occurring throughout the project as each increment is renovated. The revised Pentagon Renovation Plan must be translated into appropriate design guidelines and criteria that will establish design parameters.

A Management Support Architect-Engineer, has prepared design guidelines and criteria; has prepared the Reservation Master Plan, which addresses environmental issues; has prepared the Pentagon Building Master Plan; has developed prototypical designs for architectural standards, heating, ventilating and air conditioning systems, plumbing systems, fire protective systems, electrical systems, and security systems; is developing programming and swing space requirements; is developing schedules and cost estimates; is providing technical and management support; and is completing Computer-Aided Design Documents for record drawings, shop drawings, and shop drawing reviews. Broad-scale design criteria, which are equivalent to a concept stage, will ensure that each individual increment will be compatible with the rest of the work. The goal is to achieve a completed project that has uniform and compatible materials and systems that are economic to maintain.

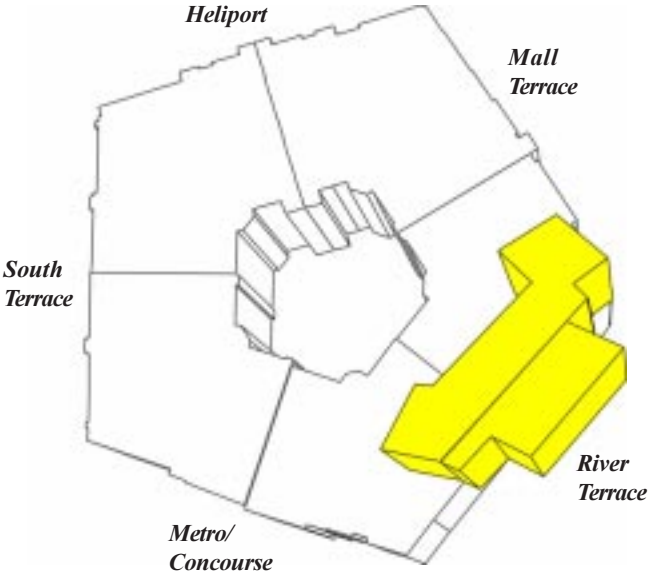
Aerial view of the Pentagon's South Terrace in February 2000. Renovation activities now can be seen in or around all five sides of the building.

In the mid-1990's the importance of information management and telecommunications (IM&T) within the Pentagon was recognized and the United States Army was tasked with establishing a project office for Information Management and Telecommunications, renovation related tasks. The Pentagon IM&T project office was established in 1991.

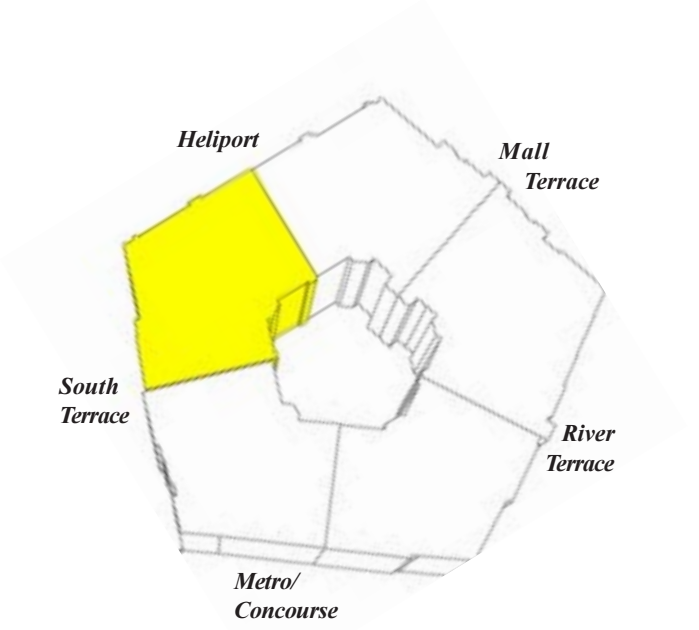
The IM&T objective is to provide cost-effective IM&T services/capabilities that will best serve the needs of the Pentagon tenants and DoD Senior Leadership by leveraging technology advancements and designing/developing integrated systems, well into the 21st Century.

BASEMENT RENOVATION

The design of the Segment 1 renovation of the Basement was completed in mid-FY 1994 with the construction beginning October 1994. The construction of Segment 1 of the Basement, preceded by the temporary re-routing of utilities, was completed in FY 1999. The design of the remaining segments began in FY 1997.



The Basement and Mezzanine levels lie under the Pentagon's Mall and River Terraces.



Wedge 1 is accessed by Corridors 3 and 4.

WEDGE 1

In December 1996, the Deputy Secretary of Defense directed that Wedge 1 be vacated by December 1997, and the construction of Wedge 1 to start by FY 1998. Renovation of above-ground areas of the Pentagon began with Wedge 1. Work is centered around Corridors 3 and 4.

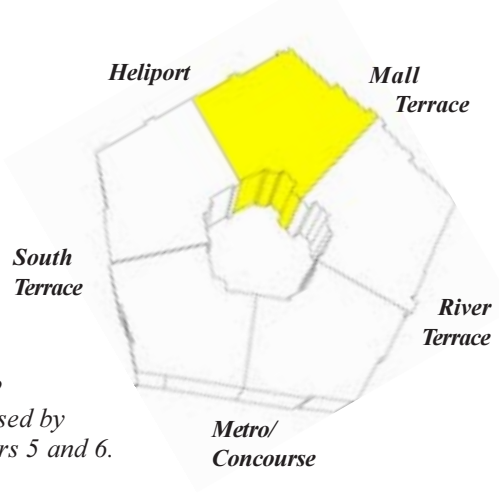
The renovation work involves the demolition and removal of all partitions, ceilings, floor finishes, mechanical, electrical, plumbing, fire protection, and communications systems. The basic structural system, as well as the stairwells and their enclosing walls, will remain. All electrical, mechanical, and plumbing systems will be replaced and a modernized telecommunication back-bone infrastructure will be installed. Utility connections will be made through the new Center Courtyard Utilities Tunnel without affecting the rest of the building. Wedge 1 will have a new food service facility, new vertical transportation service, and enhanced foyers. Much of the renovated space will be configured as "open office" space consistent with the Concept Plan. The improvements include the new South Terrace Pedestrian Bridges, which will connect South Parking to Corridors 2 and 3. The South Terrace structure consists of two bridges accommodating pedestrian traffic entering the Pentagon at the second floor at Corridors 2 and 3. This work incorporates some of the security improvements by re-routing public access to the second floor and improves safety by separating pedestrians from the vehicular traffic on the very busy Rotary Road in South Parking.

The design of Wedge 1 began in January 1994, and the last revisions were completed in FY 1999. Construction activity began in January 1998, with a "wall bashing" ceremony in February 1998, to symbolically signify the start of the above-ground work activity. Construction is scheduled for completion in FY 2001.

The River Terrace entrance marks the midpoint between Wedges 3 and 4.

WEDGE 2

Wedge 2 is also a complete slab-to-slab reconstruction of the space. Replacement of all electrical, mechanical, and plumbing systems will occur in accordance with the new design and a modernized telecommunication back-bone infrastructure will be installed.

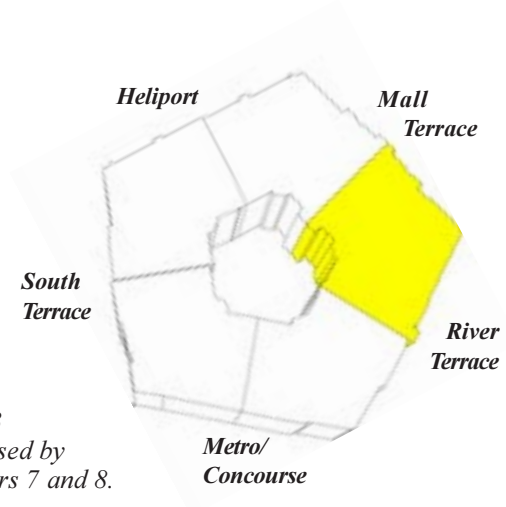


Wedge 2 is accessed by Corridors 5 and 6.

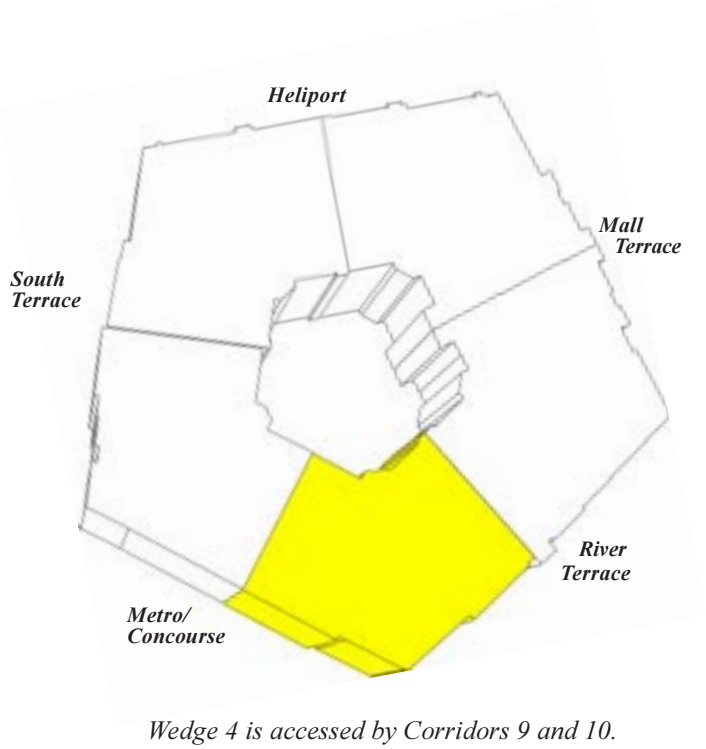
WEDGE 3

Wedge 3 includes a complete slab-to-slab reconstruction of the space. All electrical, mechanical, and plumbing services will be replaced in accordance with the new design and a modernized telecommunication infrastructure will be installed. The removal of non-masonry partitions will open the space to an "open office" concept. The work will be centered around Corridors 7 and 8.

This work also incorporates some of the security improvements by re-orienting public access to the 2nd floor.



Wedge 3 is accessed by Corridors 7 and 8.



Wedge 4 is accessed by Corridors 9 and 10.

WEDGE 4

A slab-to-slab reconstruction of the space in Wedge 4 is programmed. All electrical, mechanical, and plumbing services will be replaced and a modernized telecommunication infrastructure will be installed. The removal of non-masonry partitions will open the space to an "open office" concept. The work will be centered around Corridors 9 and 10.

This incremental area houses portions of the cafeteria facilities, the Concourse, and the Metro entrance.

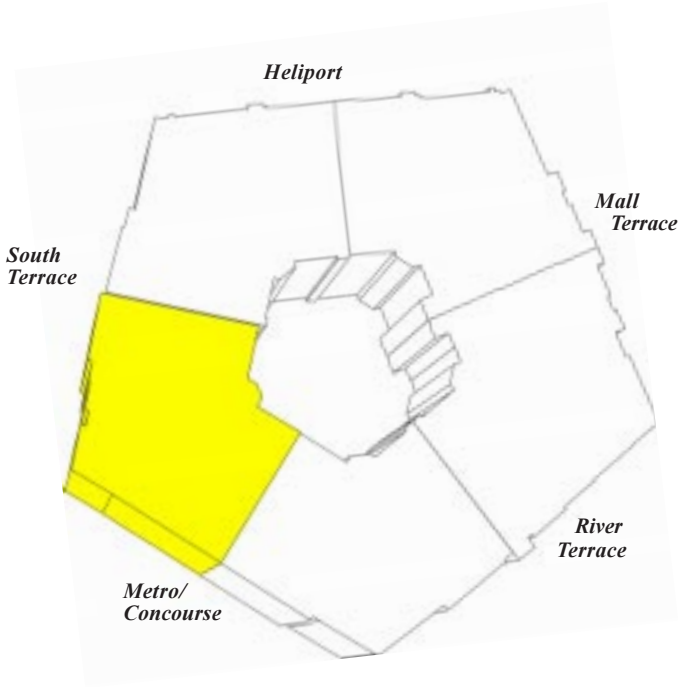
This area also incorporates some of the security improvements by re-orienting public access to the 2nd floor. Existing ramp space to upper floors will be redistributed to incorporate expanded multi-purpose facilities as well as additional office space.

The Metro/Concourse entrance marks the dividing line between Wedge 4 and Wedge 5.

WEDGE 5

This last area will also undergo a slab-to-slab reconstruction. All electrical, mechanical, and plumbing services will be replaced and a modernized telecommunication infrastructure will be installed. The removal of non-masonry partitions will open the space to an "open office" concept. This last incremental area is centered around Corridors 1 and 2.

The area houses the remaining portions of the cafeteria facilities and the Concourse. Existing ramp space to upper floors will be redistributed to incorporate auditorium facilities.



Wedge 5 is accessed by Corridors 1 and 2.

COMPLETED PROJECTS

- Basement/Mezzanine Segment 1
- Heating & Refrigeration Plant
- Center Courtyard Utilities Tunnel
- Classified Waste Incinerator Plant
- Sewage Lift Station
- River Terrace Renovation
- River Terrace Handicapped Access
- River Terrace Vehicle Bridge
- Corridor 8 Entrance Renovation
- Wedge 1 Temporary Construction
- Navy Annex Security Upgrades
- Renovation and Furnishing of Swing Space Facilities (857,872 square feet)
- Mug Handle Infill
- Basement Segment 2A2 Core & Shell
- Basement Segment 2A2 Tenant Fit-out
- Wedge 1 Demolition & Abatement

A demolition crew tears down a partition wall in Wedge 1. Demolition and abatement activities in the wedge are complete.

A view inside the new Heating & Refrigeration Plant. The plant was completed in 1997 and has save more than $1,000,000 in lower utility costs.







(Clockwise from top left): Aerial view of new Classified Waste Incinerator (left) and Heating & Refrigeration Plant (right and inset); room inside the Network Systems Management Center; ramp on the River Terrace to provide access for persons with disabilities; the River Terrace Vehicular Bridge; swing space lobby; Air Force Council Room; new telecommunication lines installed, and the new Corridor 8 Entrance area.

PUBLIC AFFAIRS

The Public Affairs Integrated Product Team is responsible for communicating information related to Pentagon renovation activities to the 25,000 employees of the Pentagon, the general public, military personnel, local government officials, the media and groups affected by the project.

Toward this end, the public affairs team disseminates information through a dedicated website, http://renovation.pentagon.mil, informational brochures and notices, presentations, open forums, displays, and signs. In 1999, public affairs staff also conducted more that 100 tours of renovation sites for Pentagon personnel, senior military leadership, political officials, and the media. Renovation e-mail and telephone "helplines" also serve to maintain open lines of communication.

A reporter with ABC News interviews Lee Evey, Pentagon Renovation Program Manager about the renovation project in June 1999.

The increased visibility of Pentagon renovation activities both inside and around the Pentagon resulted in significant and overwhelmingly positive media attention in 1999. While most of that attention focused on the magnitude and complexity of the renovation itself, several trade publications were particularly interested in the innovative procurement practices being employed by the program acquisition team. Following are some of the key highlights of the Pentagon Renovation public affairs program in 1999.

CBS News reporter, David Martin (center, facing right) interviews the Pentagon Renovation program manager inside Wedge 1. The interview will be used in a 60 Minutes II segment about the project expected to air in the spring of 2000.

- April 1999 – An open forum was held in the Pentagon auditorium to address accessibility issues for persons with disabilities. All Pentagon personnel were invited to attend. The presentation was made available on the program website.

- June 1999 – A new asbestos-removal robot was tested in Wedge 1 as part of an initiative to explore more efficient ways to remove the 15 million pounds of asbestos in the Pentagon. The event was covered by ABC News and CNN. Segments later appeared on both stations including a 6-minute segment on CNN's Science and Technology Week program.

- July 1999 – An open forum was held in the Pentagon auditorium to update Pentagon personnel on all renovation activities, answer questions, and address any issues of concern to personnel.

The public affairs program often involves coordination of groundbreaking or ribbon-cutting ceremonies. Above, senior Pentagon officials take part in a ceremonial "wall-bashing" ceremony to mark the beginning of Wedge 1 demolition.

Film crews from ABC and CNN were on hand to record an asbestos removal robot being tested in Wedge 1 in June 1999.

- August 1999 - *The Discovery Channel*, a national cable station, conducted the first of two full-day shoots of renovation activities for an hour-long program on the Pentagon for its building documentary series. The program aired February 7, 2000, and featured several minutes of renovation activities as well as an interview with the program manager, Lee Evey.

- September 1999 - The project was the feature cover story in *Building Operating Management* magazine.

- October 1999 - *The Learning Channel*, a national cable station, conducted a full-day shoot of renovation activities for an hour-long program titled "The Ultimate 10" featuring segments on the world's 10 largest structures. The program included a six-minute segment on the Pentagon and is expected to air in late March 2000.

- October 1999 - *Engineering News Record*, a weekly construction magazine, featured an article titled "Procurement – The Pentagon Pumps Up Performance," which focused on the Renovation Program's program manager, Lee Evey, and his new approaches to negotiating federal contracts.

- November 1999 - CBS News reporter, David Martin, interviews the Renovation's program manager, Lee Evey, during an all-day "walk-and-talk" video shoot through renovation activities. The footage will be used for a *60 Minutes II* piece that focuses on the Pentagon Renovation Program and the myriad challenges facing the renovation team. The 12-minute segment is expected to air in February/March 2000.

- November/December 1999 – The Renovation Program provided two tours for Andrea Stone of USA Today. The renovation program was given a full page of coverage in this national newspaper that is more typically known for its short, concise articles. The article appeared in the January 28, 2000 edition.

- December 1999 – Engineering News Record named program manager, Lee Evey as one of the magazine's top 25 newsmakers of 1999 for his implementation of innovative procurement practices.

Additional print coverage included features in the March 1999 issue of Today's Facility Manager and the December issue of Building Design and Construction magazine.

Among the key public affairs initiatives for 2000 will be the revival of the Pentagon Renovation newsletter, *The Renovator*, which will be made available at distribution points throughout the Pentagon. A redesigned web site will improve access to information and the availability of images depicting renovation activities. These efforts will most directly keep our primary customers, the 25,000 employees in the Pentagon, informed of significant activities and their associated impacts.

In early 2000, the chronological proximity of three television segments airing on national television (60 Minutes II, The Discovery Channel, The Learning Channel) will most likely prompt interest in the Pentagon Renovation Program from other regional and national news outlets. The public affairs team stands ready to provide the media information, images, tours and interviews to enhance the image of the Pentagon Renovation Program as one that is responsive, open, and accessible.

The Renovation Program caught the attention of a number of print journals including USA Today, which ran a full page story about the project in January 2000.

FEDERAL BUILDING 2 (FB2)

Subtitle F—Expansion of Arlington National Cemetery

SEC. 2881. TRANSFER FROM NAVY ANNEX, ARLINGTON, VIRGINIA.

(a) LAND TRANSFER REQUIRED- The Secretary of Defense shall provide for the transfer to the Secretary of the Army of administrative jurisdiction over three parcels of real property consisting of approximately 36 acres and known as the Navy Annex (in this section referred to as the 'Navy Annex property').

(b) USE OF LAND- (1) Subject to paragraph (2), the Secretary of the Army shall incorporate the Navy Annex property transferred under subsection (a) into Arlington National Cemetery.

(2) The Secretary of Defense may reserve not to exceed 10 acres of the Navy Annex property (of which not more than six acres may be north of the existing Columbia Pike) as a site for—

(A) a National Military Museum, if such site is recommended for such purpose by the Commission on the National Military Museum established under section 2901; and

(B) such other memorials that the Secretary of Defense considers compatible with Arlington National Cemetery.

(c) REDEMPTION OF LAND FOR CEMETERY USE- Immediately after the transfer of administrative jurisdiction over the Navy Annex property, the Secretary of Defense shall provide for the removal of any improvements on that property and shall prepare the property for use as a part of Arlington National Cemetery.

(d) ESTABLISHMENT OF MASTER PLAN- (1) The Secretary of Defense shall establish a master plan for the use of the Navy Annex property transferred under subsection (a).

(2) The master plan shall take into account (A) the report submitted by the Secretary of the Army on the expansion of Arlington National Cemetery required at page 787 of the Joint Explanatory Statement of the Committee of Conference to accompany the bill H.R. 3616 of the One Hundred Fifth Congress (House Report 105-436 of the 105th Congress), and (B) the recommendation (if any) of the Commission on the National Military Museum to use a portion of the Navy Annex property as the site for the National Military Museum.

(3) The master plan shall be established in consultation with the National Capital Planning Commission and only after coordination with appropriate officials of the Commonwealth of Virginia and of the County of Arlington, Virginia, with respect to matters pertaining to real property under the jurisdiction of those officials located in or adjacent to the Navy Annex property, including assessments of the effects on transportation, infrastructure, and utilities in that county by reason of the proposed uses of the Navy Annex property under subsection (b).

(4) Not later than 180 days after the date on which the Commission on the National Military Museum submits to Congress its report under section 2903, the Secretary of Defense shall submit to Congress the master plan established under this subsection.

(e) IMPLEMENTATION OF MASTER PLAN- The Secretary of Defense may implement the provisions of the master plan at any time after the Secretary submits the master plan to Congress.

(f) LEGAL DESCRIPTION- In conjunction with the development of the master plan required by subsection (d), the Secretary of Defense shall determine the exact acreage and legal description of the portion of the Navy Annex property reserved under subsection (b)(2) and of the portion transferred under subsection (a) for incorporation into Arlington National Cemetery.

(g) REPORTS- (1) Not later than 90 days after the date of the enactment of this Act, the Secretary of the Army shall submit to the Secretary of Defense a copy of the report to Congress on the expansion of Arlington National Cemetery required at page 787 of the Joint Explanatory Statement of the Committee of Conference to accompany the bill H.R. 3616 of the One Hundred Fifth Congress (House Report 105-736 of the 105th Congress).

(2) The Secretary of Defense shall include a description of the use of the Navy Annex property transferred under subsection (a) in the annual report to Congress under section 2674(a)(2) of title 10, United States Code, on the state of the renovation of the Pentagon Reservation.

(h) DEADLINE- The Secretary of Defense shall complete the transfer of administrative jurisdiction required by subsection (a) not later than the earlier of—

(1) January 1, 2010; or

(2) the date when the Navy Annex property is no longer required (as determined by the Secretary) for use as temporary office space due to the renovation of the Pentagon.

Under the current schedule for the renovation of the Pentagon, it is anticipated the Navy Annex property and facility will be used as temporary and permanent office space until the conclusion of the renovation program. After that time, all the facility occupants will be relocated to either the Pentagon and/or other government controlled space.

(2) The Secretary of Defense shall include a description of the use of the Navy Annex property transferred under subsection (a) in the annual report to Congress under section 2674(a)(2) of title 10, United States Code, on the state of the renovation of the Pentagon Reservation.

Washington Headquarters Service (WHS), Real Estate & Facilities Division (RE&FD) Response to Section 2881

It is currently planned that, in accordance with Section 2881 of the FY 2000 Defense Appropriations Act, the Secretary of Defense will assign administrative jurisdiction of the Navy Annex property to the Secretary of the Army by January 1, 2010.

Further, in accordance with Section 2881 of the FY 2000 Defense Appropriations Act, by September 2001, the Secretary of Defense will establish a master plan for the use of the Navy Annex property that will take into account (A) the report submitted by the Secretary of the Army on the expansion of Arlington National Cemetery required at page 787 of the Joint Explanatory Statement of the Committee of Conference to accompany the bill H.R. 3616 of the One Hundred Fifth Congress, and (B) the recommendation of the Commission on the National Military Museum to use a portion of the Navy Annex property as a site for the National Military Museum.

FY 1991 - LEGISLATIVE AUTHORIZATION

SEC 2804. OPERATION AND CONTROL OF THE PENTAGON RESERVATION

(a) IN GENERAL - (1) Chapter 159 of title 10, United States Code, is amended by inserting after section 2673 the following new section:

"§2674. Operation and control of the Pentagon Reservation

"(a)(1) Jurisdiction, custody, and control over, and responsibility for, the operation, maintenance, and management of the Pentagon Reservation is transferred to the Secretary of Defense.

"(2) Before March 1 of each year, the Secretary of Defense shall transmit to the Committees on Armed Services of the Senate and the House of Representatives, the Committee on Environment and Public Works of the Senate and the Committee on Public Works and Transportation of the House of Representatives a report on the state of the renovation of the Pentagon Reservation and a plan for the renovation work to be conducted in the fiscal year beginning in the year in which the report is transmitted.

"(b) The Secretary may appoint military or civilian personnel or contract personnel to perform law enforcement and security functions for property occupied by, or under the jurisdiction, custody,

Nov. 5 DEFENSE AUTHORIZATION ACT P.L. 101-510

Sec. 2804 and control of the Department of Defense, and located at the Pentagon Reservation. Such individuals—

"(1) may be armed with appropriate firearms required for

personal safety and for the proper execution of their duties,

whether on Department of Defense property or in travel status; and

"(2) shall have the same powers as sheriffs and constables to

enforce the laws, rules, or regulations enacted for the protection of persons and property.

"(c)(1) The Secretary may prescribe such rules and regulations as the Secretary considers appropriate to ensure the safe, efficient, and secure operation of the Pentagon Reservation, including rules and regulations necessary to govern the operation and parking of motor vehicles on the Pentagon Reservation.

"(2) Any person who violates a rule or regulation prescribed under this subsection is liable to the United States for a civil penalty of not more than $1000.

"(3) Any person who willfully violates any rule or regulation prescribed pursuant to this subsection commits as Class B misdemeanor.

"(d) The Secretary of Defense may establish rates and collect charges for space, services, protection, maintenance, construction, repairs, alterations, or facilities provided at the Pentagon Reservation-

"(e)(1) There is established in the Treasury of the United States a revolving fund to

be known as the Pentagon Reservation Maintenance Revolving Fund (hereafter in this section referred to as the'Fund'). There shall be deposited into the Fund funds collected by the Secretary of space and services and other items provided an organization or entity using any facility or land on the Pentagon Reservation pursuant to subsection (d).

"(2) Monies deposited into the Fund shall be available, without fiscal year limitation, for expenditure for real property management, operation, protection, construction, repair, alteration, and related activities for the Pentagon Reservation.

"(f) In this section:

"(1) The term 'Pentagon Reservation' means that area of land (consisting of approximately 280 acres) and improvements thereon, located in Arlington, Virginia, on which the Pentagon Office Building, Federal Building Number 2, the Pentagon heating and sewage treatment plants, and other related facilities are located, including various areas designated for the parking of vehicles.

"(2) The term 'National Capital Region' means the geographic area located within the boundaries of (A) District of Columbia, (B) Montgomery and Prince Georges Counties in the State of Maryland, (C) Arlington, Fairfax, Loudoun, and Prince William Counties and the City of Alexandria in the Commonwealth of Virginia, and (D) all cities and other units of government within the geographic areas of such District, Counties, and City."

(2) The table of sections at the beginning of such chapter is amended by inserting after the item relating to section 2673 the following new item:

"2674. Operation and control of the Pentagon Reservation."

P.L. 101-510 LAWS OF 101st CONG.—2nd SESS. Nov. 5 Sec. 2804

(b) TRANSFER OF FUNDS FOR FISCAL YEAR, 1991.—For fiscal year 1991, the Secretary of Defense may transfer into the Pentagon Reservation Maintenance Revolving Fund (established by section 2674(e) of title 10, United States Code), from funds appropriated to the military departments and the Defense Agencies, amounts equal to the amounts that would otherwise be paid by the military departments and the Defense Agencies to the General Services Administration for the use of the Pentagon Reservation.

FY 2000 - DEPARTMENT OF DEFENSE APPROPRIATIONS ACT WITH CERTIFICATION

The Department of Defense Appropriations Act, 2000, Public Law 106-79, Section 8064 (Oct. 25, 1999)

SEC. 8064. (a) None of the funds appropriated in this Act may be transferred to or obligated from the Pentagon Reservation Maintenance Revolving Fund, unless the Secretary of Defense certifies that the total cost for the planning, design, construction and installation of equipment for the renovation of the Pentagon Reservation will not exceed $1,222,000,000.

(b) The Secretary shall, in conjunction with the Pentagon Renovation, design and construct secure secretarial offices and support facilities and security-related changes to the subway entrance at the Pentagon Reservation.

COST CERTIFICATION LETTERS SENT TO:

United States Senate

Honorable Albert Gore, Jr., President of the Senate
Honorable John C. Warner, Chairman , Committee on Armed Services
Honorable Carl Levin, Ranking Minority Member, Committee on Armed Services
Honorable Bob Smith, Chairman, Committee on Environment and Public Works
Honorable Max Baucus, Ranking Minority Member, Committee on Environment and Public Works
Honorable Ted Stevens, Chairman, Committee on Appropriations
Honorable Robert C. Bryd, Ranking Minority Member, Committee on Appropriations

United States House of Representatives

Honorable J. Dennis Hastert, Speaker
Honorable Floyd Spence, Chairman, Committee on Armed Services
Honorable Ike Skelton, Ranking Minority Member, Committee on Armed Services
Honorable Bud Shuster, Chairman, Committee on Transportation and Infrastructure
Honorable James L. Oberstar, Ranking Minority Member, Committee on Transportation and Infrastructure
Honorable C.W. Bill Young, Chairman, Committee on Appropriations
Honorable, David R. Obey, Ranking Minority Member, Committee on Appropriations

OFFICE OF THE SECRETARY OF DEFENSE
PENTAGON RENOVATION PROGRAM
100 BOUNDARY CHANNEL DRIVE
ARLINGTON VA 22202-3712

Honorable Albert C. Gore, Jr.
President of the Senate
Washington, DC 20515

1 MAR 2000

Dear Mr. President:

The Department of Defense Appropriations Act, Fiscal Year 2000, Public Law 106-79, §§8064 (Oct. 25, 1999) requires the Secretary of Defense to certify that the total cost for the planning, design, construction and installation of equipment for the renovation of the Pentagon will not exceed $1,222,000,000.

In order to continue with this critical program, I certify that the Department will constrain the specified costs of the renovation to $1,222,000,000. At this stage in the construction process, we have accomplished a preliminary determination on the impact of the current ceiling on the design of the renovated Pentagon. We can renovate the remaining areas of the Pentagon within the $1,222,000,000 under aggressive cost savings initiatives that are being implemented. This will result in a restructured program that will achieve the basic elements of renovation which were promised to Congress and which form the basis on which the program was originally initiated. However, the program will not always achieve some of the other elements of the renovation that we have previously reported and which would be cost effective from a life-cycle perspective. The total cost of the renovation depends heavily on inflation in construction costs over the next decade and our ability to institute more cost effective contracts. The Department will seek adjustment of the ceiling, as appropriate, as it proceeds with the program.

Consistent with cost estimates for projects in the Military Construction Program, this certified amount does not include the cost of: 1) purchase and installation of information management and telecommunications equipment, 2) rental and operation of leased swing space, and 3) purchase and installation of furniture for the renovated Pentagon. The certification also does not cover ancillary projects including the design and construction of the Heating and Refrigeration Plant, the Classified Waste Incinerator, the Remote Delivery Facility, other recently required security enhancements and costs prior to Fiscal Year 1994.

If you have any questions about the Pentagon Renovation Program, please have your staff contact me at (703) 693-8954.

Sincerely,

Walker Lee Evey

Walker Lee Evey
Program Manager
Pentagon Renovation

ON COST, ON SCHEDULE, BUILT FOR THE NEXT FIFTY YEARS

CONTACT INFORMATION

The Pentagon Renovation Program frequently provides tours through renovation activities for Pentagon personnel.

If you would like more information about the Pentagon Renovation Program, or if you would like to set up a tour of renovation activities, please call the Public Affairs Office at (703) 693-8935 or (703) 693-8933 during business hours, or call our helpline at (703) 693-4357 (HELP). To e-mail us or read more about the renovation program, visit our website at: http://renovation.pentagon.mil